SWEN90016
Software Processes & Project Management

Revision and Exam

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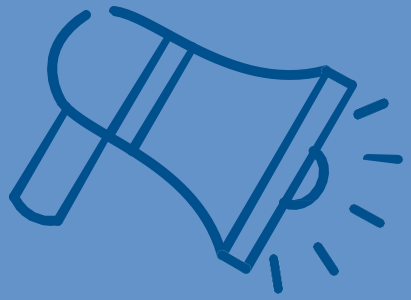
2019 – Semester 1
Lecture 12: Revision and Exam Prep



WANT TO HELP IMPROVE SUBJECTS?

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Complete the Subject Experience Survey
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Semester Structure

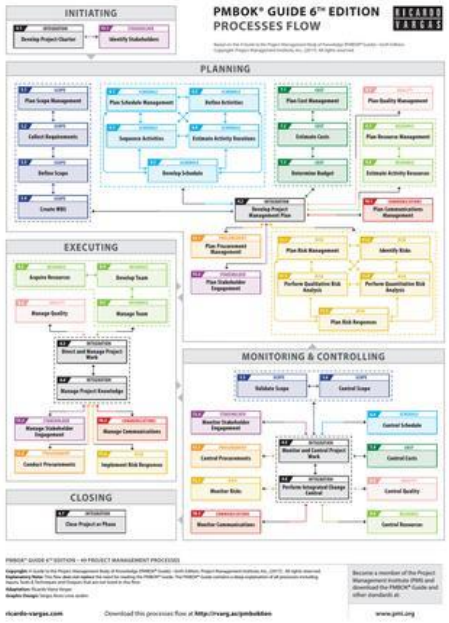
Week #	Lecture Date	Lecture Law G15 – Thursday 9.00am to 11.00am	Assignment
1	07/03/19	Subject Introduction, Introduction to Projects and Project Management,	
2	14/03/19	Project Management Plan & SDLC's	Assignment 1 Spec available on LMS 15/3
3	21/03/19	Individuals, Motivation and Teams	
4	28/03/19	Stakeholder Management Communication Management	Assignment 2 available & Groups created during the workshops / tutorials – attendance mandatory
5	04/04/19	Project Planning and Scheduling Assignment 1 & 2 open forum / discussion	Assignment 1 (Individual) due Fri 5/4 @ 11.59 pm
6	11/04/19	Cost Estimation	
7	18/04/19	Risk Management	
	25/04/19	*Non Teaching Week – Mid semester break*	Assignment 2 (Part 1) due Wed 24/4 @ 11.59 pm
8	02/05/19	Quality Management	
9	09/05/19	Ethics, Outsourcing & Procurement	Assignment 2 (Part 2) due Sat 11/5 @ 11.59 pm
10	16/05/19	Guest Lecture	Assignment 2 (Part 3) due Sat 18/5 @ 11.59 pm
11	23/05/19	Configuration Management	Assignment 2 (Final) due Sat 25/5 @ 11.59 pm
12	30/05/19	Subject Revision and Exam Prep	Assignment 2 Project Demonstration during tutorials

L1 - Intended Learning Objectives

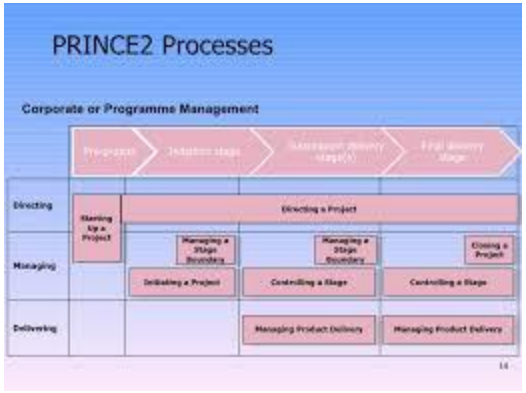
- Understand key elements of a Project and why organisations use them
- Understand the foundational components of Project Management
- Understand key skills and responsibilities / activities of a Project Manager
- Understand key elements of how to manage Projects
- An initial look at (some) Project Management Methodologies / Standards

L1 – Project Management Methodologies / Standards

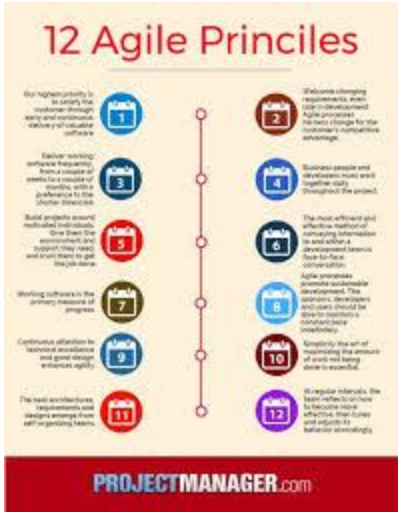
PMBOK



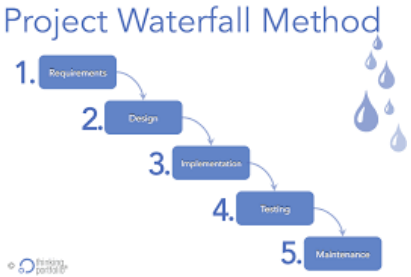
Prince2



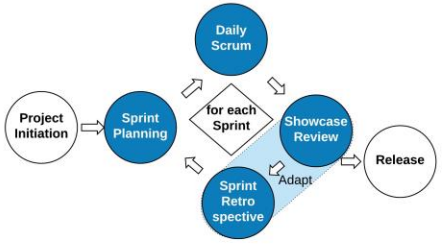
Agile



Waterfall



SCRUM



L1: Project Initialization

L1 - Intended Learning Objectives

- Explore key drivers in why projects fail / succeed
- Understand how organisations select the best / right projects
- Understand the Project Initialization process, Business Case structure and why organisations use them
- Explore various Investment techniques and financial models
- Understand responsibilities associated with building a Business Case and the accountable group / individual
- Understand what a Project Charter is and how it is used

L1: Project Initialization

History tells us we have failed.

ALL IT PROJECTS					
	2011	2012	2013	2014	2015
Successful	29%	27%	31%	28%	29%
Challenged	49%	56%	50%	55%	52%
Failed	22%	17%	19%	17%	19%

Project Management Process

Project Initialization

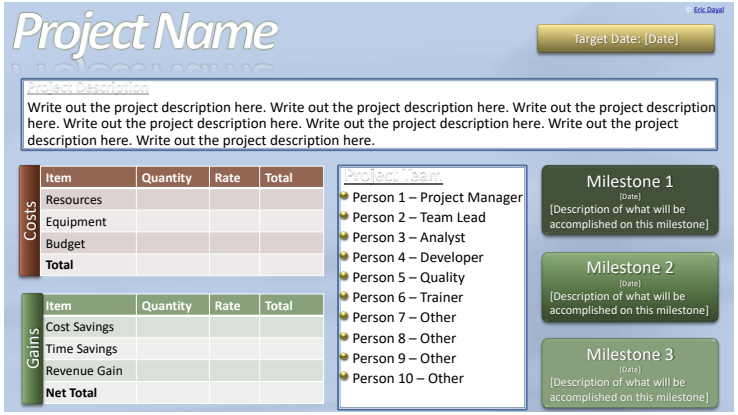
analyze Case Study (business needs)

analyze constraints (scope, time, cost)

develop Business Case (cost verses benefit)

develop Project Charter (stakeholder analysis)

Project Charter



L2 - Intended Learning Objectives

- Understand what a Process is and its relevance to Project Management
- Understand what a Project Management Plan (PMP) is and when it should be used
- Understand the components of a Project Management Plan
- Understand what a Software Development Lifecycle (SDLC) is and the advantages / disadvantages of various models

L2 – Project Management Plan (Formal)

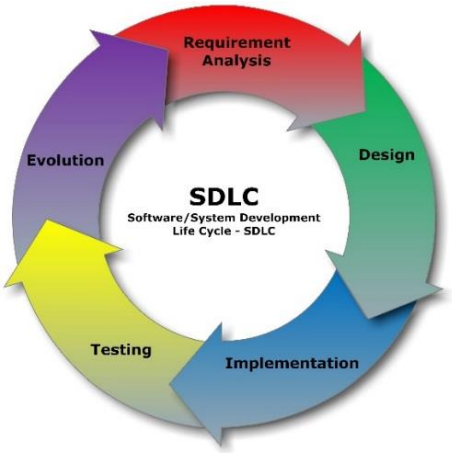
A typical PMP consists of all / or most of the following categories.

- *Project Information*
  - Executive Summary
  - Financial Authority to proceed
  - Key Stakeholders
  - Scope
  - Delivery approach / SDLC - Waterfall or Agile
  - Resources / People
  - Key Milestones
  - Project Budget
  - Business Value (Financial & Non-Financial Benefits)
  - Lessons learned applied to this project
  - Constraints

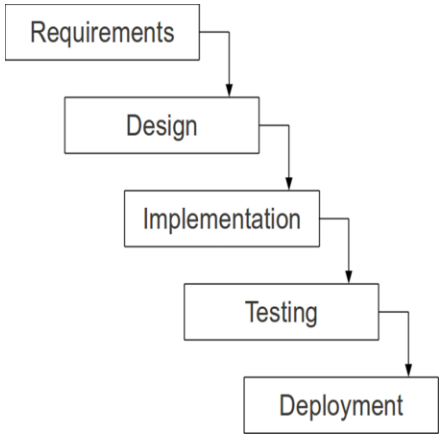
L2: PMP and SDLC Introduction

Formal Processes

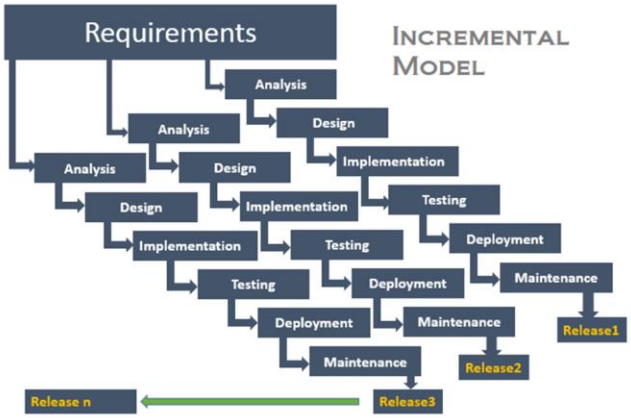
- Waterfall
- Incremental
- V-Model



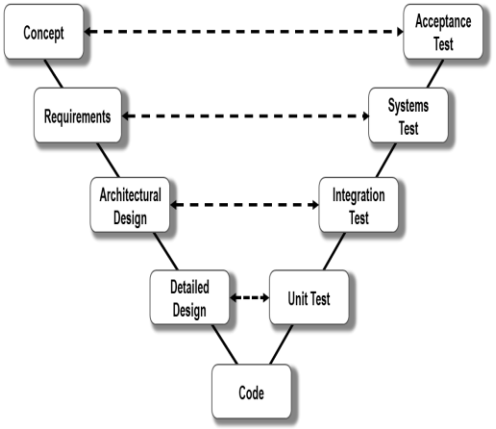
Waterfall



Incremental



V-Model



L2 - Agile

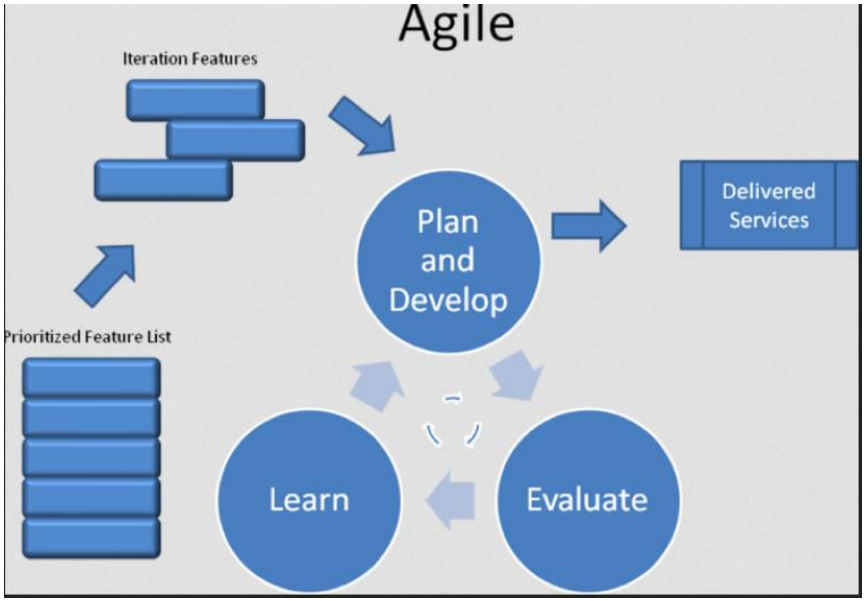
There are many SDLCs around with organisations typically favouring a blend of Formal and Agile approaches.

Formal Processes

- Waterfall
- Incremental
- V-Model

Agile Processes

- **Kanban**
- **Extreme Programming**
- **Scrum**

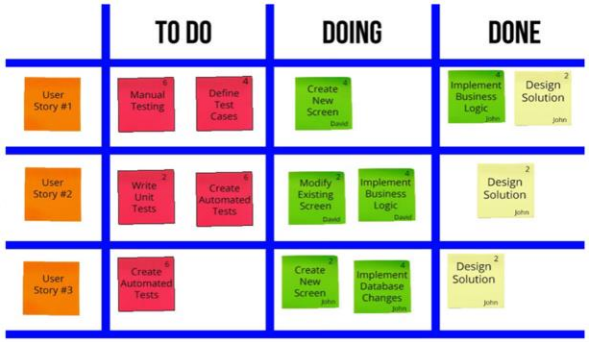


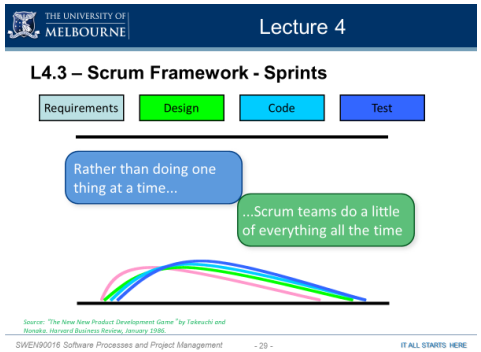
Scrum in 100 words

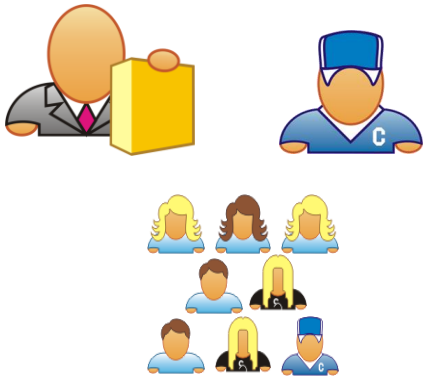
- Scrum is an agile process that allows us to focus on delivering the highest business value in the shortest time.
- It allows us to rapidly and repeatedly inspect actual working software (every two to four weeks).
- The business sets the priorities. Teams self-organise to determine the best way to deliver the highest priority features.
- Every two to four weeks, you can see real working software and decide to release it as is or continue to enhance it for another sprint.

L2: Introduction to Agile SDLCs

Agile is widely used across industry – not always in its original form.
It is NOT Dead!





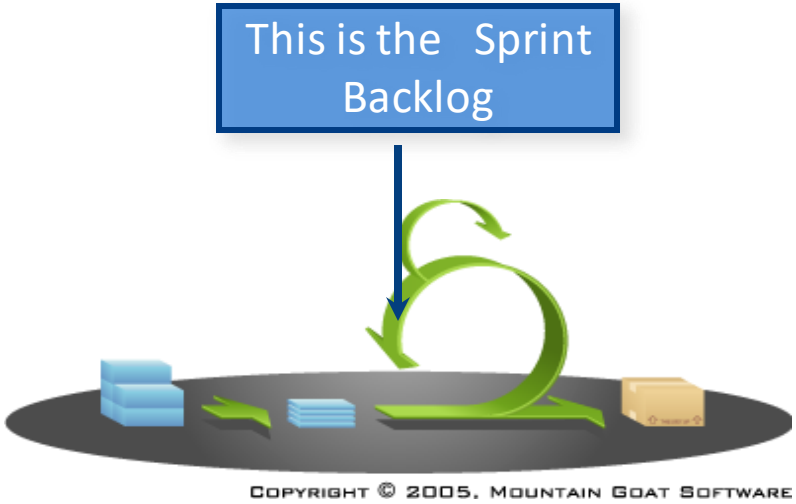


L2: Agile - Introduction to Scrum

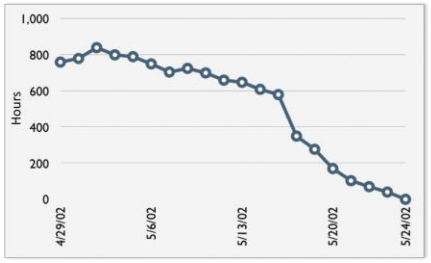
Roles
- Product owner
- ScrumMaster
- Team

Ceremonies
- Sprint planning
- Sprint review
- Sprint retrospective
- Daily stand-ups

Artifacts
- Product backlog
- Sprint backlog
- Burndown charts



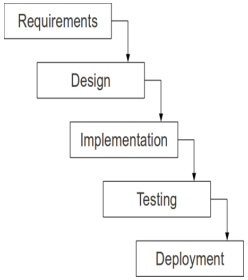
Burn Down Chart

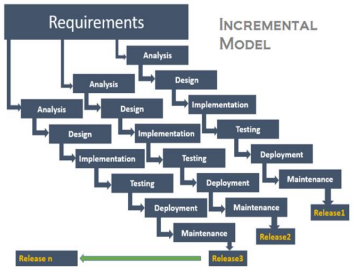


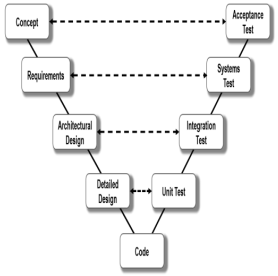
Formal or Agile which one Should I use???

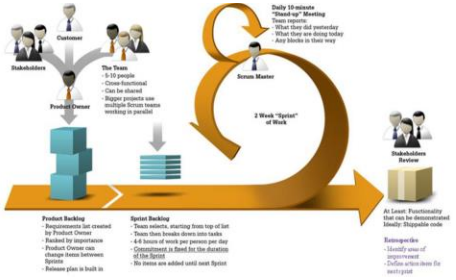
There is no one right answer. The following questions can assist deciding:

- How Stable Are the Requirements?
- Do the end users need to collaborate?
- Is the Time Line Aggressive or Conservative?
- What Is the Size of the Project?
- Where Are the Project Teams Located?
- Do you have the Critical / Required Resources?









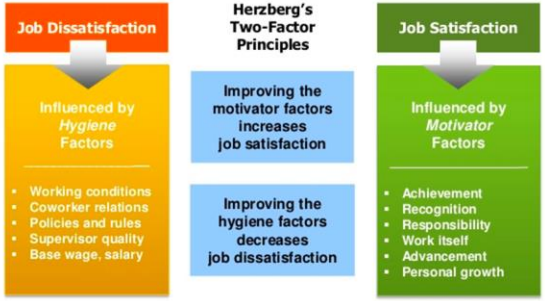
L3 - Intended Learning Objectives

- Understand motivation.
- Understand organisational theory and how people are motivated.
- Understand how leaders lead and managers manage.
- Understand how to manage the most important project resource.
- Understand why we use teams and their value.
- Understand how teams form and perform.
- Understand team roles and structures.
- Understand the advantages & disadvantages of teams

L3: Individuals, Motivation & Teams

Individuals and what motivates them

Motivational Theories



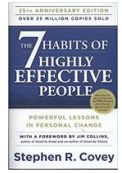
Leaders and Leadership Styles

REFERENT POWER	Based on followers' identification and liking for the leader. A schoolteacher who is adored by her students has referent power.
EXPERT POWER	Based on followers' perceptions of the leader's competence. A tour guide who is knowledgeable about a foreign country has expert power.
LEGITIMATE POWER	Associated with having status or formal job authority. A judge who administers sentences in the courtroom exhibits legitimate power.
REWARD POWER	Derived from having the capacity to provide rewards to others. A supervisor who gives rewards to employees who work hard is using reward power.
COERCIVE POWER	Derived from having the capacity to penalize or punish others. A coach who sits players on the bench for being late to practice is using coercive power.

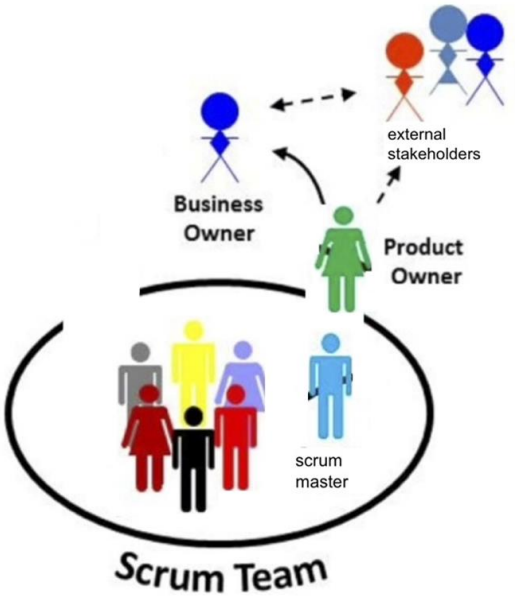
Nine Influence Factors [Thamhain & Wilemon]

1. ***Authority***: Legitimate hierarchical.
2. ***Assignment***: Perceived ability to influence future work assignments.
3. ***Budget***: Perceived ability to authorise use of funds.
4. ***Promotion***: Ability to improve workers position
5. ***Money***: Ability to increase a workers pay & benefits
6. ***Penalty***: Ability to cause punishment.
7. ***Work Challenges***: Ability to assign work to individuals.
8. ***Expertise***: Perceived special knowledge that others deem / think is important.
9. ***Friendship***: Ability to establish friendly personal relationships.

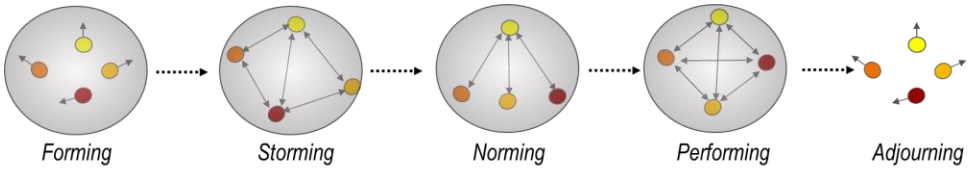
Effective Individual

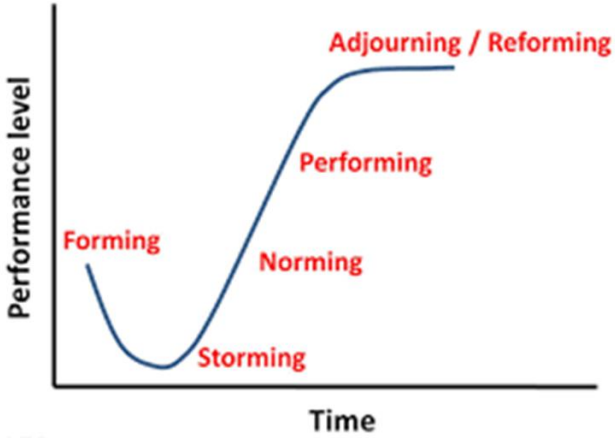


L3: Individuals, Motivation & Teams

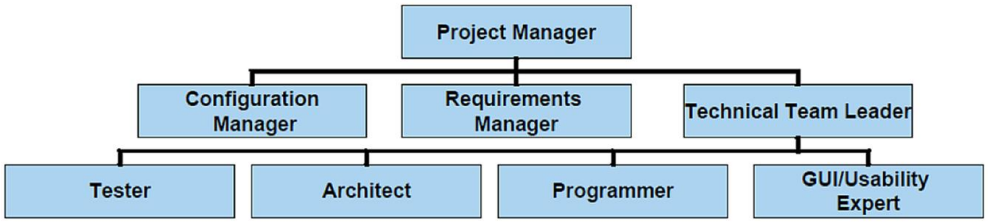


Team Stages





Team Structures



L4: Communication Management

L4 - Intended Learning Objectives

- Understand the communication challenge
- Understand the importance of listening & Active listening
- Understand the importance of communicating effectively & key skills
- Understand a communications plan and how it is used
- Understand the Stakeholder Management Process
- Identifying Stakeholders & the Stakeholder Register
- Understand Stakeholder Engagement and Planning

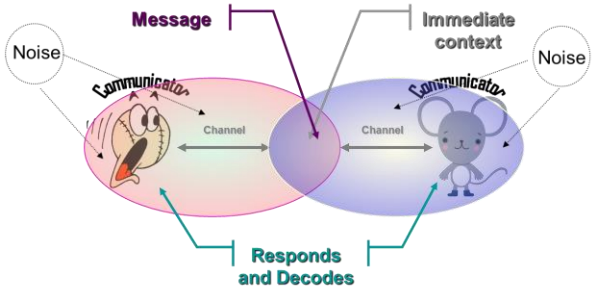
L4: Communication Management

The Act of Listening Demands Real Effort

Truly Effective Listeners are Rare

Listening is An Essential Life Skill

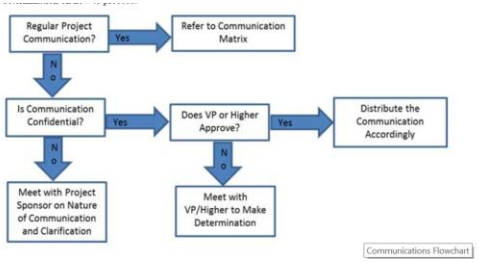
Few People Practice Listening and Even Fewer Have Been Trained to Listen



Various types of Listening

- Passive Listening
- Active Listening
- Critical Listening

Stakeholder	Communication Objective	Format	Frequency	Owner	Importance
Sponsor	Provide updates on project progress, key issues, success and support required	Regular Meeting - face to face Formal Report	Weekly Monthly	Project Manager	High
Business Expert	Gather requirements, sign-off all scope, approve prototype and final acceptance	Formal Report / documentation	Fortnightly	Project Manager	High
Finance	Future funding approval	Project Finances	Bi-monthly	Finance rep	High
Human Resources	Identify staff required for project and deal with all staff related items	Resource plans	Monthly	Project Support	Medium
Risk Department	Identify risks and mitigation strategies and ensure they are being followed	Risk Management Plan	Monthly	Project Support	Medium
Internal IT Staff	Identify resources for all phases including Design, Requirements Gathering, Development and Production Implementation	Regular Meeting - face to face Formal Report	Weekly Monthly	Project Manager	High
External IT Staff / Supplier	To ensure they can execute on their Testing Services contract	Formal Report	Monthly	Project Manager	Low



Priority	Definition	Decision Authority	Timeframe for Resolution
Priority 1	Major impact to project or business operations. If not resolved quickly there will be a significant adverse impact to revenue and/or schedule.	General Manager	Within 4 hours
Priority 2	Medium impact to project or business operations which may result in some adverse impact to revenue and/or schedule	Project Manager	Within 1 business day
Priority 3	Slight impact which may cause some minor scheduling difficulties with the project but no impact to business operations or revenue.	Project Manager	Within 2 business day
Priority 4	Insignificant impact to project but there may be a better solution.	Project Manager	Work continues and any recommendations are submitted via the project change control process.

L4: Stakeholder Management

Communication Channels

How well medium is Suited to:	Hard Copy	Telephone Call	Voice Mail	eMail	Meeting	Web Site
Confirming commitments	1	3	3	1	2	1
Building consensus	3	2	3	3	1	3
Mediating conflict	3	2	3	3	1	3
Resolving misunderstanding	3	1	3	3	2	3
Addressing negative behaviour	3	2	3	2	1	3
Expressing support/appreciation	1	2	3	1	2	1
Encouraging creative thinking	2	3	3	2	1	3

Stakeholder Register

Name	Position	Internal/ External	Project Role	Contact Information
Stephen	VP of Operations	Internal	Project Sponsor	stephen@globaloil.com
Betsy	CFO	Internal	Senior Manager. Approves Funds	betsy@globaloil.com
Chien	CIO	Internal	Senior Manager. PM's Boss	chien@globaloil.com
Ryan	IT Analyst	Internal	Team Member	ryan@globaloil.com
Lori	Director Accounting	Internal	Senior Manager	lori@globaloil.com
Sanjay	Director Refineries	Internal	Senior Manager of Largest Refinery	sanjay@globaloil.com
Debra	Consultant	External	Project Manager	debra@globaloil.com
Suppliers	Suppliers	External	Software Supplier	suppliers@gmail.com

Stakeholder Analysis

Name	Power / Influence	Current Engagement	Potential Management Strategies
Brian	High/High	Champion / Leading	Brian can seem intimidating due to his physical stature and deep voice, but he has a great personality and sense of humour. He previously led a similar software upgrade project at another company and knows what he wants. Manage closely and ask for his advice as required. He likes to be kept in touch with short, frequent updates in person.
Mary	High/Medium	Resistant	Mary is very organised yet hardhead. She has been pushing corporate IT standards, and the system the PM and sponsors like best goes against those standards, even though it's the best solution for this project and the company as a whole. Need to convince her that it is ok and that people still respect her work and position.
Finance Team	Medium/High	Resistant	The Finance Team is resistant to the Project. They believe the funds can be better used elsewhere in the organisations. They also believe the Benefits are not achievable in the defined pay back period. Key stakeholder as they control the funding which the project is dependant on. Need to convince them of the costs & benefits and ensure they understand the detail. Get them involved in a detailed review of all $'s.

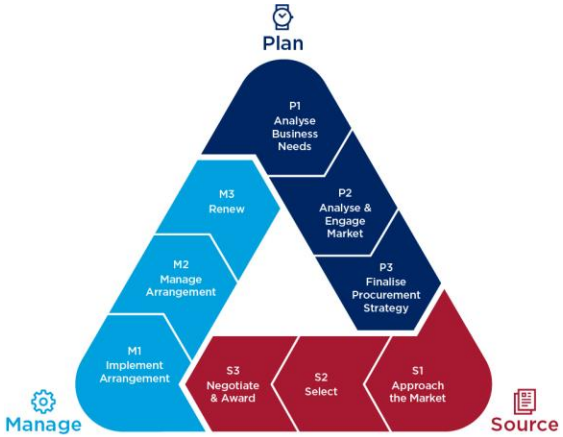
L9 - Intended Learning Objectives

- Understand how and why Ethics are important
- Australian Computer Society Code of Ethics
- Understand the Procurement Management Process
- Understand what Outsourcing is and why it is used
- Understand the types of contracts, when you would use them and key contractual clauses

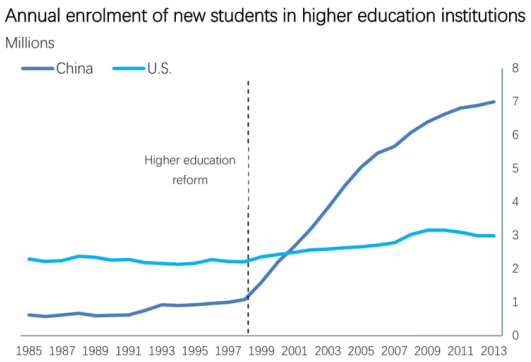
L9: Ethics and Outsourcing

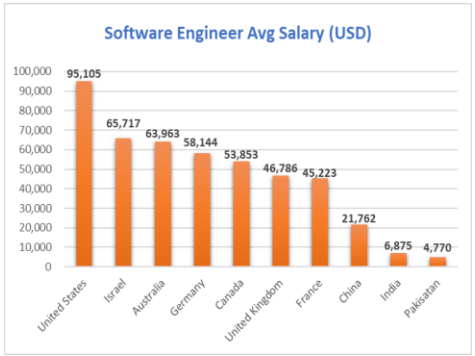
Ethics

Procurement



Outsourcing





Source: China National Bureau of Statistics and US Department of Education

Contracts

L5: Project Planning & Scheduling

L5 - Intended Learning Objectives

- Understand the role of a project schedule
- Understand how to develop a project schedule
- Understand how to use a project schedule to monitor and track project progress
- Understand agile planning principles

L5: Project Planning & Scheduling

Work Breakdown Structure

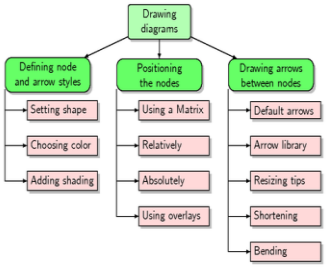
Redecorate Room

Prepare materials
- Buy paint
- Buy a ladder
- Buy brushes/rollers
- Buy wallpaper remover

Prepare room
- Remove old wallpaper
- Remove detachable decorations
- Cover floor with old newspapers
- Cover electrical outlets/switches with tape
- Cover furniture with sheets

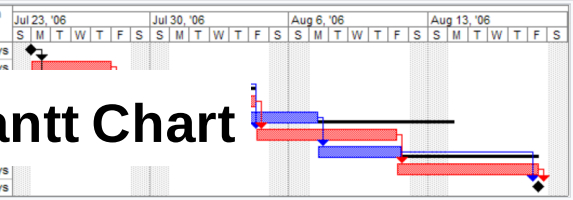
Paint the room

Clean up the room
- Dispose or store leftover paint
- Clean brushes/rollers
- Dispose of old newspapers
- Remove covers



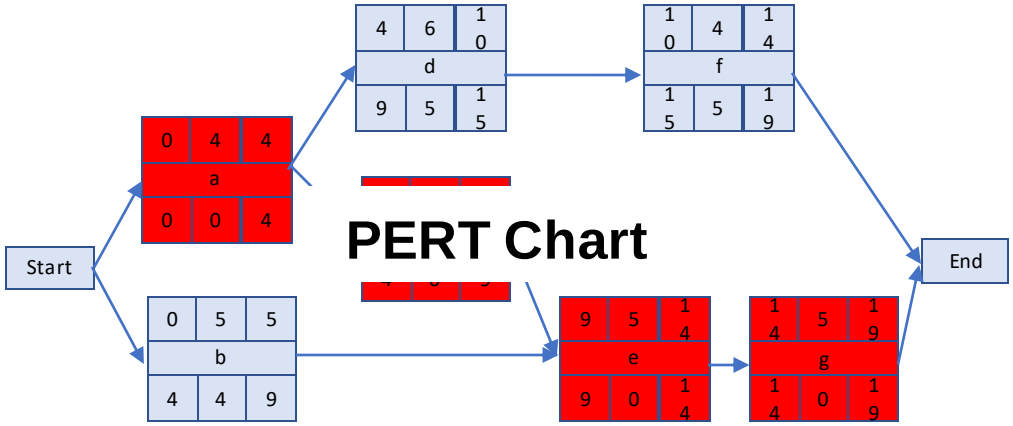
Gantt Chart

ID	Task Name	Predecessors	Duration
1	Start		0 days
2	a	1	4 days
3	b	1	
4	c	2	
5	d	2	
6	e	3,4	
7	f	5	
8	g	6	5.17 days
9	Finish	7,8	0 days

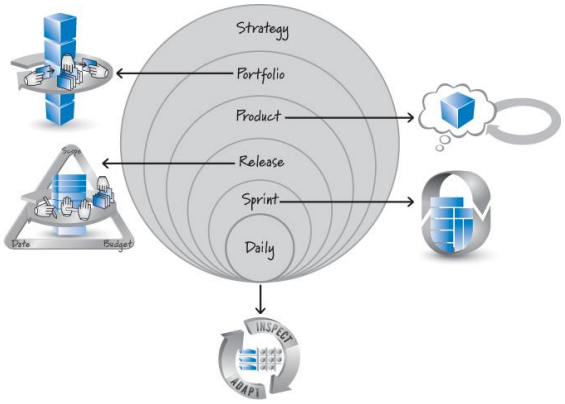


A Gantt chart created using Microsoft Project (MSP). Note (1) the critical path is in red, (2) the slack is the black lines connected to non-critical activities, (3) since Saturday and Sunday are not work days and are thus excluded from the schedule, some bars on the Gantt chart are longer if they cut through a weekend.

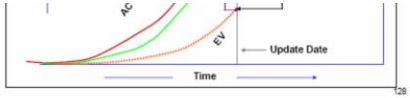
PERT Chart



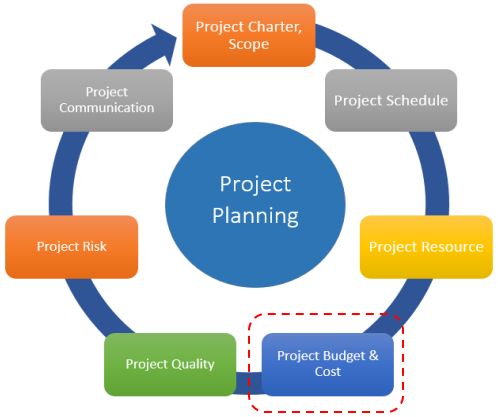
Scrum Planning Levels



Earned Value Analysis



L6 - Intended Learning Objectives



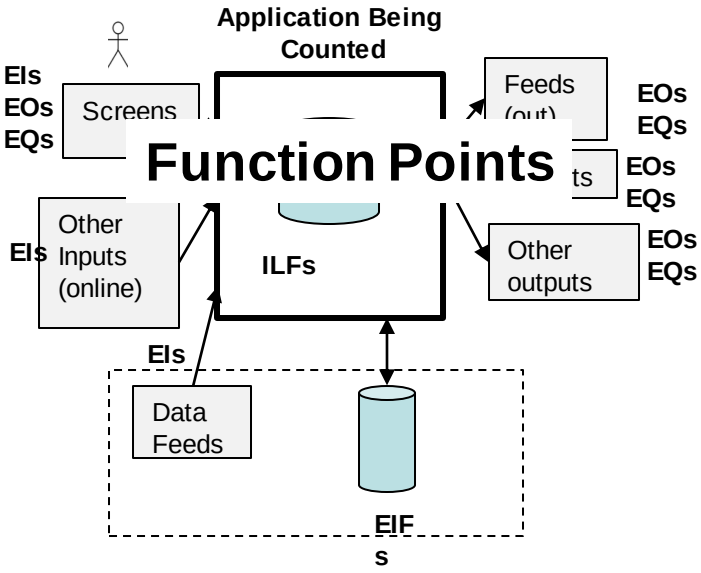
- Understand the importance of cost estimation and the challenges involved
- Understand the cost estimation techniques
- Understand software size estimation techniques
- Understand the principles of the COCOMO II model for algorithmic cost estimation
- Understand cost estimation techniques used in Agile software development lifecycles

L6: Cost Estimation

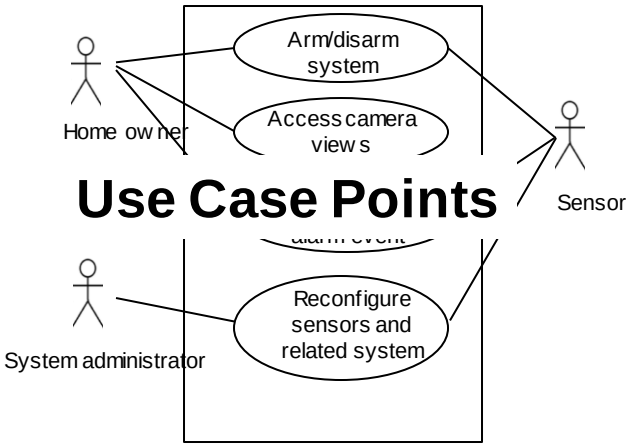
Lines of Code

C	COBOL
Lines of code: 4 (excluding whitespace)	Lines of code: 6 (excluding whitespace)

Function Points



Use Case Points

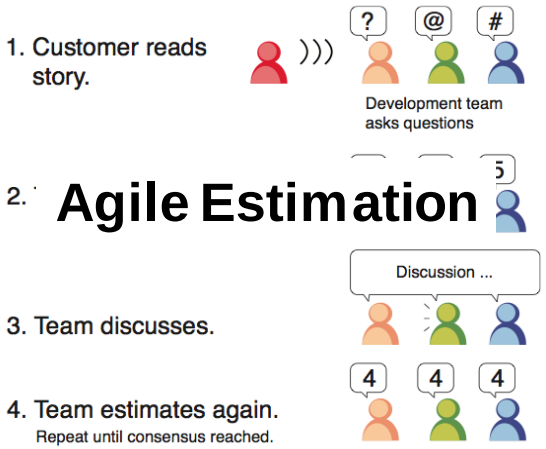


Parametric Estimation

COCOMO II

$$Effort = A \times Size^{B} \times M$$

Agile Estimation



L7 - Intended Learning Objectives

- Understand the fundamentals of risk management
- Understand the Risk Management Process
- Understand how to:
  - plan risk management activities
  - identify risks
  - analyze and assess risks
  - respond to risks (risk strategies)
  - monitor and control risks

L7: Risk Management

Risk Planning → **Risk Management Plan**

Risk Analysis and Assessment:

Risk ID	Risk	Probability (0 – 100%)	Impact	Exposure	Rank
1	XXX	40%	4	1.6	4

Risk Impact Analysis Table

Risk Identification:

Kinds of Risks:

Project, Product, Business

Identification Techniques:

Pondering	Interviewing
Brainstorming	Checklists
Delphi	SWOT Analysis

Risk Response

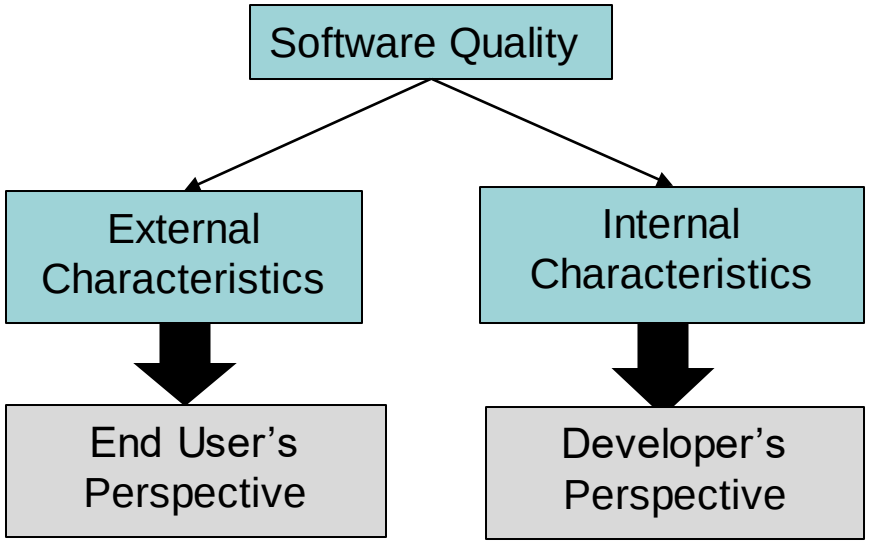
Risk ID	Trigger	Owner	Response	Resources Required

Risk Register

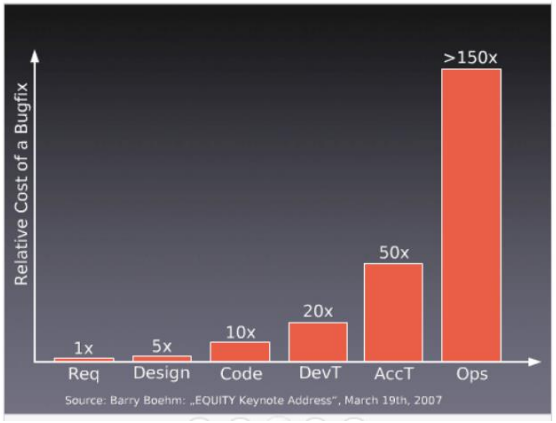
L8 - Intended Learning Objectives

- Understand the fundamentals of quality management
- Understand the quality management process
- Understand the following quality management activities:
  - Quality Assurance
  - Quality Planning
  - Quality Control and Monitoring

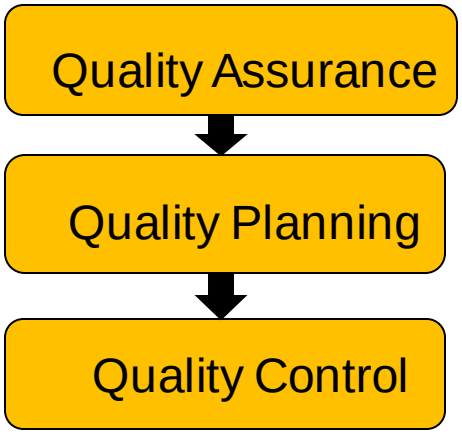
L8: Quality Management



Cost of Quality



Quality Management Process



Quality Planning

- Quality Goals
- Verification vs Validation

Verification Activities

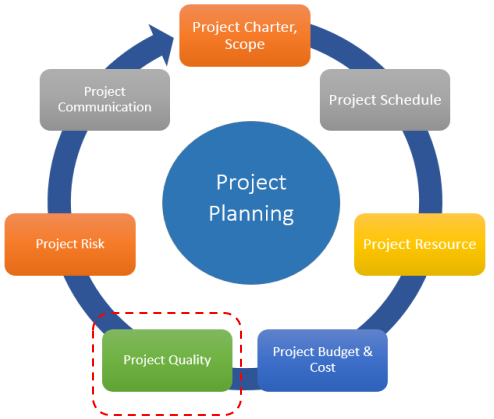
- Technical Reviews
- Business Reviews
- Management Reviews
- Audits

IT Project Management

Alex Marzella – Director IDEE Group

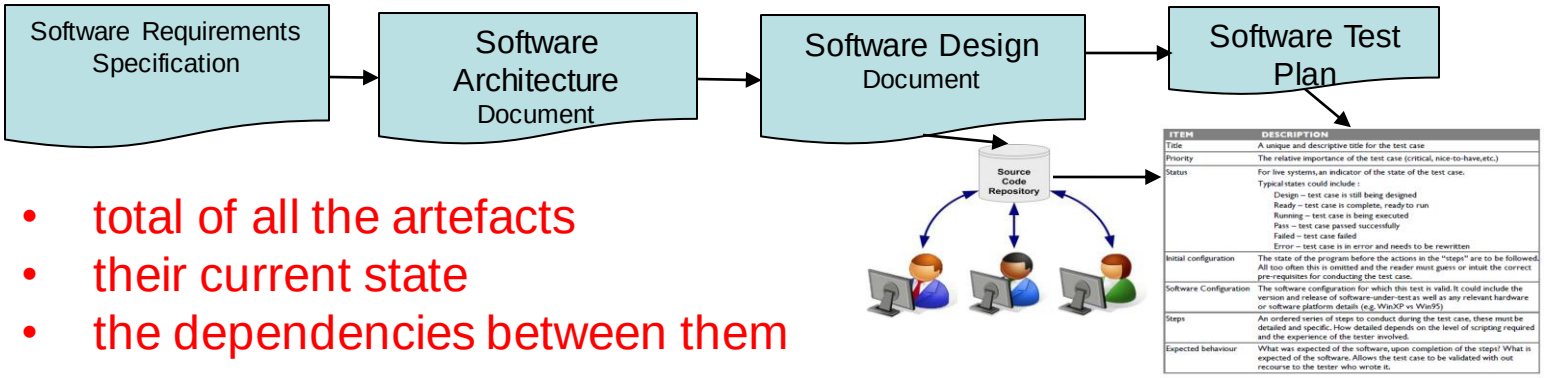
L11 - Intended Learning Objectives

- Understand the role of configuration management
- Understand the configuration management process
- Understand the tasks associated with configuration management



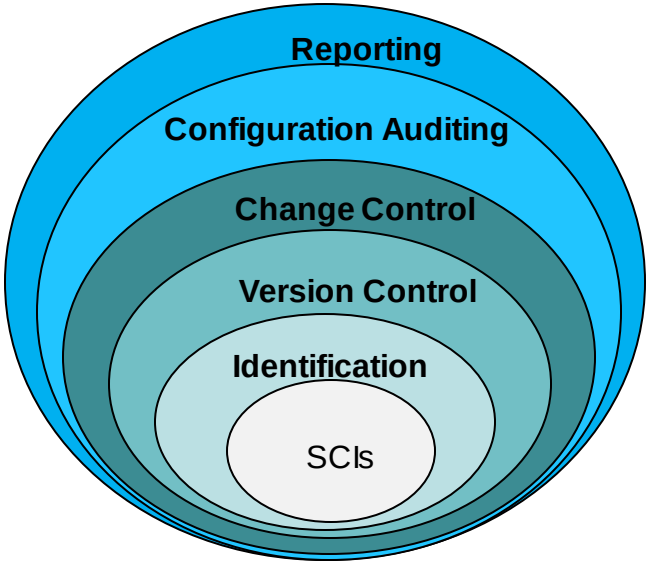
L11: Configuration Management

Software Configuration

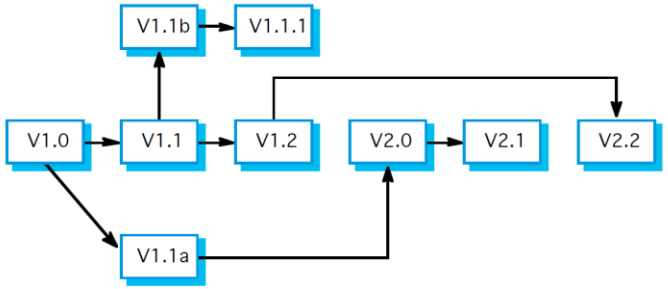


- total of all the artefacts
- their current state
- the dependencies between them

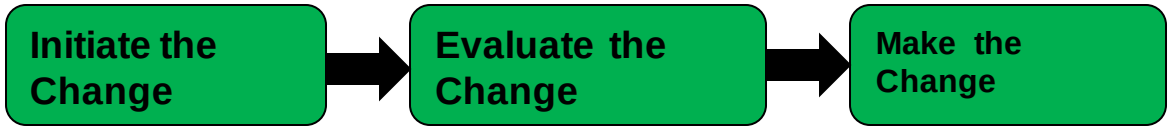
CM Tasks



Version Control



Change Control



Tutorials/Workshops

- Ten workshops during the semester
  - supporting activities to get a deeper understanding of the concepts covered in the lectures
- Final workshop in week 12 (this week)
  - a recap of the material and project demonstrations

Assignment 1 - Individual (20 marks)

Assignment 1 - Intended Learning Objectives

- Identify the key characteristics, features and requirements for a project
- Identify the unknowns and risks in a project as identified at the start of the project
- Identify the goals of a project and the intended scope/deliverables

Assignment 2 - Group (30 marks)

Assignment 2 - Intended Learning Objectives

- Develop a Project Management Plan (PMP) for a given project brief
- Plan the activities involved in the chosen process
- Execute, monitor and control processes to achieve an outcome
- Work effectively in a team. Each member is expected to spend 30-40 hours on this assignment (as per handbook)

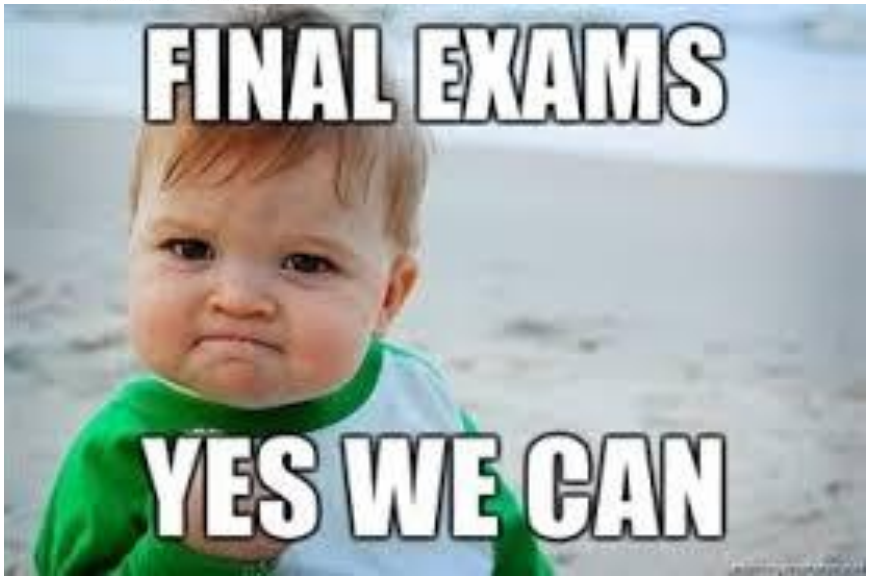
Final Exam

- Total duration - 2 hours plus 15 minutes reading time
- Total marks – 50% (hurdle of 50% - 25 out of 50)
- The exam contains:
  - 10 multiple choice questions (10 marks)
  - 4 short answer questions (16 marks)
  - 2 long answer questions (24 marks)
- Follows the same pattern as the practice exam
- All topics covered during the semester are examinable!

Exam Preparation

- Revise all topics and attempt the practice exam (solutions will not be available for the practice exam)

- My consultation hours:
  - Will announce via LMS


FINAL EXAMS
YES WE CAN


Good Luck!